MASTER 46

Distribution of Spring Rainfall in Kent

Data

The daily rainfall totals at 33 stations in Kent for the months of March, April, May and June were examined for the years 1957, 1958, 1961. These years included one wet, one dry and one "mixed" spring.

Method

Four stations, namely East Malling, Faversham, Wye and Bodiam were regarded as key stations. The distribution of rainfall over the county when any one, two, three or four of these stations reported rain was noted. A report of a "trace" was ignored.

Results

Table 1 shows:-

(a) the percentage of occasions at each station (of 32) when rain was reported the same day as it was reported at any one of the key stations.
(b) the number of occasions(in the twelve months) when rain was reported from any of the (32) stations, when it was not reported at one of the key stations.

The measure of agreement with any of the key stations lay principally in the 70-90 per cent range. Herne Bay, in a very dry area, was consistently low; Ashford gave the impression of being unreliable in its reports.

Bodiam in extreme southwest Kent was slightly the best of the four key stations in that other stations kept in step with it more often.

There was no high correlation between percentage of agreement and distance from the key station, although "the nearer the station, the closer the agreement" was generally true.

The extent of disagreement was similarly in poor correlation with the distance from the key station except in the case of East Malling, where the coefficient was 0.71 - which may be fortuitous.

On average the number of days per month when recordable rain fell elsewhere than at any key station was $1\frac{1}{2}$-$2\frac{1}{2}$, East Malling and Wye being the stations least likely to fail to give an indication of rain somewhere else in the county.

Table 2 shows the distribution of rainfall when all four, three out of four, two out of four, one out of four, or none of the key stations reported measurable rain.

On average if all four stations reported rain, so did 26 other stations; if three, 21.4 other stations; if two, 14.4 other stations; if one, 6.1 other stations, if none 4.1 stations. Therefore:-

If all four key stations report rain on one day, on average rain fell on 90% of Kent
If three key stations report rain on one day, on average rain fell on 74% of Kent
If two key stations report rain on one day, on average rain fell on 50% of Kent
If one key station reports rain on one day, on average rain fell on 21.5% of Kent
If no key station reported rain, then if rain fell at all, it might have fallen on an average of 12.5% of Kent.

Out of 366 days under review no recordable rain was reported at any of the four key stations on 191 days. Of these 191 occasions, recordable rain did not fall elsewhere at the other 29 stations on 145 occasions. (76 per cent). On the other 46 occasions rain did fall at one or other station.

/Of these

Of these 46 occasions, there were 34 when traces of rain fell at one or more of the key stations, and on these days the average number of stations reporting rain were 4.8 or 14.5% of the area.

On the remaining 12 occasions, rain was reported at an average of 2.3 stations, or 7 per cent of the area.

Conclusions

It seems reasonable to conclude that if the rainfall behaviour at four stations in an area such as Kent is known, then they do give a fair picture of extent of the rain. In other words.

Key Stations	County
Rain at 4	Rain over most of area.
Rain at 3	Rain over threequarters of area.
Rain at 2	Rain over half of area.
Rain at 1	Rain over a fifth of area.
Rain at none	No rain likely on 3 out of 4 occasions
Traces of rain only	No rain likely on 19 out of 20 occasions

These are based on average conditions, there are bound to be exceptions.

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Table 1a

Station	Percentage of occasions when rain fell on days when it also fell at Bodiam	E.Malling	Faversham	Wye
Bromley	75	78	74	71
Orpington	80	82	75	75
Sundridge	83	87	79	77
Swanley	75	75	71	69
Dartford	79	80	75	73
Eynesford	75	75	67	66
Kensing	85	88	82	81
Strood	81	83	82	74
E. Malling	91	100	83	82
Gillingham	80	81	79	74
Matts Hall	78	79	81	74
Thornham	84	86	86	82
Sittingbourne	77	78	76	72
Throwley	88	83	85	88
Faversham	91	77	100	72
Herne Bay	66	65	70	69
Ramsgate	77	74	79	80
Elmstone	78	78	79	81
Barham	81	77	80	82
Deal	77	70	79	77
Dover	80	75	78	80
Folkestone	90	81	83	89
Lyminge	87	80	82	85
Wye	88	82	86	100
Ashford	76	69	75	77
Bonnington	84	75	78	80
Headcorn	77	73	74	74
Iden	78	69	66	71
Bodiam	100	80	75	77
Goudhurst	92	82	86	87
Pembury	79	78	71	73
Tunbridge Wells	84	87	82	80
Falconhurst	85	86	81	78
Mean	81	79	78	77

Table 1b

	Number of occasions when rain fell on days when it did not fall at Bodiam	E.Malling	Faversham	Wye
	33	17	30	27
	31	15	31	24
	35	18	34	30
	26	14	22	17
	28	13	27	21
	18	6	22	16
	29	12	28	21
	28	10	20	21
	28	0	30	23
	26	10	22	20
	25	10	17	16
	34	20	28	24
	24	12	20	19
	42	32	37	24
	30	22	0	18
	29	18	20	15
	36	25	26	16
	38	25	32	21
	36	28	29	17
	32	26	22	18
	37	28	31	21
	35	31	36	21
	33	27	33	20
	32	25	28	8
	24	18	18	7
	30	28	30	18
	21	14	19	11
	16	16	25	11
	0	11	23	13
	31	18	31	22
	21	9	23	15
	27	11	26	19
	29	12	27	22
	30	18	24	19
Days per month	2.5	1.5	2.0	1.6

Table 2

Total no of stations reporting rain	Key stations reporting rain: 4	3	2	1	0
31-33	55	3			
28-30	15	8	1		
25-27	6	4			
22-24	4	4		1	
19-21	1	3	9	0	
16-18	3	2	7	1	
13-15	2	1	5	3	1
10-12		2	2	7	4
7-9			3	4	8
4-6				8	7
1-3				10	25
Mean percentage of Kent reporting rain	91	74	50	21.5	12.5 %